Cleveland-Chandler Motors Corporation
300 E. 131 Street
Cuyahoga County
Cleveland
Ohio

Photographs and
Written and Historic Data

Historic American Engineering Record
Heritage Conservation and Recreation Service
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The Chandler Motor Car Company
The Cleveland Automobile Company
The Chandler-Cleveland Motors Corporation
HAER OH-11G

NAME: Chandler-Cleveland Motors Corporation

LOCATION: Cleveland, Ohio

DATE OF SETTLEMENT: 1913

PRESENT OWNER: Parker Appliance Co., Weatherhead Co.

PRESENT USE: Industrial: auto parts manufacture; Offices; Laboratories; Warehouses.

SIGNIFICANCE: One of the largest automobile manufacturing plants in Cleveland, introduced mildly innovative factory designs.

HISTORIAN: Tom Fisher

The Chandler Motor Car Company
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The history of The Chandler Motor Car Company is full of superlatives. The company had "a phenomenal growth," with "probably the most brilliant financial success of the industry, reckoning time as the prime measure."[1] Its factory was "one of the largest automobile manufacturing plants in Cleveland," with "few equals ... from an industrial point of view."[2] Its six-cylinder car "created a sensation" when first marketed, quickly becoming "a national favorite."[3]

That success rests, in large part, with Frederick C. Chandler. He was born in Cleveland in 1874.[4] By 1890, he had begun working for the H. A. Lozier and Company, a Cleveland manufacturer of sewing machines, boats, bicycles, and an early gasoline automobile, the Cleveland Tricycle.[5] After the American Bicycle Company bought the company in 1899, H. A. Lozier began making a second automobile in Detroit.[6] Frederick Chandler became the sales manager for The Lozier Motor Company on the West Coast and in Europe. By 1910, he had become vice-president in charge of sales and, by 1911, Lozier's general manager.[7]

Despite his success at Lozier, Frederick Chandler resigned in 1913 along with four Lozier executives, Samuel Regar, W.S.M. Mead, Charles A. Emise, and Sidney Black, and one Lozier engineer, John V. Whitbeck.[8] In February, 1913, those men founded The Chandler Motor Car Company. With an authorized capitalization

of $425,000, the company had temporary offices in Cleveland's Swetland Building and at 982 Woodward Avenue in Detroit. The company also had a temporary factory in a garage on E 65th Street in Cleveland.[9] F. C. Chandler served as the company's president; Charles Emise, its vice-president; Samuel Regar, its treasurer; and John Whitbeck, its engineer.[10]

At the time of its organization, The Chandler Motor Car Company had options on a 6 acre site in an industrial area of Cleveland, along E. 131st Street and The Belt Line Railroad tracks.[11] A factory, designed by Ernest McGeorge, was begun on the site in February, 1913, and completed by The Bolton and Pratt Company in June of that year. In the words of a contemporary writer, "the growth of the Chandler factory has been one of the most rapid in Cleveland."[12] Rapid, yes; but hardly innovative, for the plant's monitor roof and its brick bearing wall construction had been popular in the Cleveland auto industry a decade earlier. Chandler needed a quick, inexpensive factory and, in 1913, bearing walls with steel framing best fit the bill.

Largely intact, Chandler's building #1 has a one-story 400 foot by 120 foot manufacturing area with a 25 foot central clerestory space and 15 foot side aisles. Steel columns and open web trusses support the monitor roof, which is constructed of concrete slabs and covered with tar and gravel. The brick bearing walls have large, industrial-sash windows. Creosoted wood blocks on a cement base cover the floor.[13]

Production in the plant began on July 1, 1913.[14] At the September Chicago Automobile Show, Chandler's six-cylinder car attracted much attention because of its "new low" price of $1,785, as well as for such advanced features as its enclosed valve springs, its multiple disc clutch, and its Westinghouse electric starter.[15] Aiming for the quantity production of automobiles, Chandler manufactured 550 autos in the last six months of 1913. That rate increased to 1,950 cars in 1914, lowering the unit price to $1,595.[16]

Chandler achieved that production increase without adding substantially to its plant. Although George Rutherford, in March, 1914, built a one-story 64 foot by 40 foot storage building north of the factory, the structure's wood-frame and corrugated-iron walls reflected its temporary nature. Two other temporary buildings were added in January, 1915: a 145 foot by 20 foot road testing garage and a 141 foot by 54 foot inspection building. That same month, the company added a more substantial 120 foot by 60 foot brick extension to the rear of building #1. Built as an air compressor room, that structure still contains three early Worthington and Ingersoll-Rand 300 pound compressors, and three original General Electric induction water pumps.[17]

The next major plant expansion came in August, 1915. Chandler added a 46 foot by 42 foot boiler house and a 403 foot by 120 foot manufacturing building, both designed by Ernest McGeorge and built by The Bolton and Pratt Company. The boiler

house has a steel frame, brick bearing walls, and metal industrial sash windows. It also containes some early equipment: one Connelly 130 horsepower boiler and two Connelly 300 horsepower boilers for manufacturing purposes and one McNaull 635 horsepower boiler for heating the plant. Equipment no longer intact included a 300 ton, two-compartment coal hopper and Union feed water pumps.[18]

The manufacturing facility, building #2, stands behind building #1 and has a similar single-story, monitor-roof, brick bearing wall structure. Building #2 differs in its use of 24 inch steel beams to support the roof, giving the clerestory space a 30 foot clearance.[19] That addition more than doubled Chandler's production capacity. The company produced 7000 automobiles in 1915 and 15,000 the following hear.[20]

In December, 1915, The Chandler Motor Car Company increased its quthorized capitalization to $10,000,000, making it the largest Cleveland automobile manufacturer and the 13th largest in the nation.[21] At the same time, The Bolton and Pratt Company finished Ernest McGeorge's plans for building A, a 120 foot by 40 foot office wing attached to the front of building #1. The structure is two-stories high and has a reinforced concrete frame with 20 foot square bays. Its brick facing has a diaper pattern in the parapet. Rear stairs connect the building to the rest of the factory.[22]

In September, 1916, the Chandler company announced that it

would begin production of its first closed body automobiles. The Briggs Manufacturing Company, which took "care of the Chandler bodies," built them in a Detroit plant and finished and painted them in a factory adjacent to the Chandler plant.[23]

In September, 1916, Chandler also announced that "one new four-story building, 60 by 500 foot, will be built for general assembly work, and will be ready for spring production. In addition, a special service building 60 by 160 and one story is being added."[24] Ernest McGeorge designed both structures. The four-story structure, building #3, has two rows of mushroom columns supporting flat slab concrete floors, 20 foot square structural bays, 15 foot floor heights, two 6000 pound elevators, three stair towers, a forced hot water heating system, and a cladding of brick spandrels and industrial-sash windows. In contrast to the conservative design of Chandler's first two factories, building #3 was almost too innovative. Ernest McGeorge's design called for 8 inch, non-monolithic floor slabs. Cleveland's building commissioner, still distrustful of reinforced concrete design, made The Crowell-Lundoff-Little Construction Company prepare "a four panel test ... with a test load of two times calculated live load of 250 pounds per square foot over entire four panels. Test to be made before building is occupied."[25] The service building stood in front of and was aligned with building #3, maintaining the latter's flat-slab structural system. The Gaylord Feaga Company served as general contractor for the structure.

With the completion of those additions in the early part of

1917, The Chandler Motor Car Company was ready for an annual output of 20,000 automobiles. But, the manufacturing restrictions that came with the onset of World War I reduced Chandler's production to the 1916 level of 15,000 vehicles.[26] Nevertheless, Chandler made a $1,206,000 profit in the first six months of 1917. That profit came from the company's production of Holt 10-ton artillery tractors for the U. S. Army, one of Cleveland's largest war contracts.[27]

The company made only minor additions to its plant in 1917. Following the designs of Ernest McGeorge, The Crowell-Lundoff-Little Company built an elevated steel framed bridge between buildings #2 and #3. The bridge contained a monorail and had a live load rating of two-tons.[28] The Van Dorn Iron Works supplied material for another bridge, 114 foot by 9 foot, between building #1 and the adjacent factory of The W. J. Walker Company, Chandler's major supplier of parts.[29] Other 1917 additions included a 60 foot by 16 foot tool shed and a 40 foot by 20 foot saw storage shed.

That year, Chandler also bought a semicircular property across E. 131st Street for the storage and shipment of vehicles. The company built a 290 foot loading dock along the site's rail siding. On Coit Road, at the end of E. 131st Street, Chandler bought a triangular property for the testing of its army tractors. A 240 foot by 30 foot tractor paint shop and a 220 foot by 44 foot tractor test shop faced Coit Road.[30]

In 1918, Chandler produced 9,172 automobiles in addition to its army tractors. The Sam W. Emerson Company began, in March of that year, Ernest McGeorge's plans for a 400 foot by 80 foot plant, building #6, on the company's new semicircular site. The one-story structure was completed in July, 1918. Its flat-slab reinforced-concrete structure was "to be extended to four floor."[31] That extension came in October, 1919, when John Gill and Son fireproofed the first floor, erected two elevator housings and a stair tower, and added three additional floors. A tunnel connected building #6 to the existing plant.[32] At the same time, Gill and Son completed McGeorge's plans for a four-story, 420 foot by 60 foot extension to building #3, covering the one-story service building with the same flat-slab concrete construction.[33]

Factory lay-outs of the 1919 Chandler plant remain.[34] Building #1, in addition to its boiler house and air compressor building, contained the machine shop, a receiving and parts storage area, a repair department, and a time study department. Materials handling equipment included inclined chutes, moving waist-high belt conveyors, rails with moving chains imbedded in the floor, and monorails with moving chain-guides attached to the ceiling. The machine shop made extensive use of specialized machine tools, with separate departments making the steering mechanisms, the transmissions, the cylinder heads and blocks, and the axles. At the east end of building #1 stood an elevated bridge leading to building #2. Chassis assembly, painting, and storage occupied that

structure. A moving assembly line extended the entire length of the building, with toilets, locker rooms, and storage areas in mezzanines spanning the 40 foot by 20 foot bays.

Finish body work, storage, and shipping occurred in building #6. The tunnel under E. 131st Street carried the Chandler bodies along a monorail to a hoist, which lifted them to the third floor of building #3. That building housed Chandler's final assembly line. The fourth floor contained a general storage area, with smaller areas for sheet metal and pattern storage. At the east end of the fourth floor stood a 220 foot by 50 foot enameling department, containing two 80 foot long ovens, a 30 foot square washing room, and a 20 foot by 10 foot buffing machine.

On the third floor, underneath the enameling department, stood a 100 foot by 60 foot rim storage area. A rim chute ran along one wall of the adjacent 140 foot by 60 foot tire room. Two tire rack areas, 75 foot by 28 foot, stood along the opposite wall. Once the rims were attached to the tires they moved down a tire chute to an adjacent 240 foot by 60 foot paint and wheel department. That room had storage racks plus three paint dibs spaced 40 feet apart. The body assembly department occupied the rest of the third floor. The body hoist from the building #6 tunnel stood at the west end of the department. The bodies moved on a ceiling mounted rack, past a 20 foot square experimental room, to a 200 foot by 60 foot storage room. Along one wall stood a tube storage and windshield storage area which contained a series

of vacuum tanks. The bodies were put on a conveyor, where the windshields and other trim pieces were attached. A hoist then lowered the bodies through a hole to the second floor.

The second floor received both chassis and motor from the bridge and elevator at its eastern end. The chassis was placed on a conveyor, turned over, spray painted in two adjacent booths, and sent through a 120 foot oven. A 280 foot motor conveyor paralleled the chassis conveyor, lowering the motor onto the chassis when it left the oven. The tire chute from the third floor then lowered tires for attachment to the chassis. Further down the moving line, bodies were lowered and attached. The last 220 feet of the conveyor was devoted to the final assembly of trim.

A car drop hoist lowered the completed automobiles to a 200 foot by 20 foot final testing area on the first floor. Adjacent to that area stood a 280 foot by 40 foot repair department and the 160 foot by 60 foot service department, originally in a separate building. A 140 foot by 60 foot area on the first floor contained the factory office in addition to a final paint and varnish room and another testing area. At the east end of the first floor stood a 340 foot by 60 foot final equipment department, with its own stock room and conveyor, and a finish car storage area.

The Chandler employees had access to recreation rooms, a tennis court, a cafeteria in each department, and a large restaurant and auditorium for company functions. In addition, the

company organized social outings for its workers, perhaps in compensation for the plant's reputation "as one of the most efficient in the industry."[35]

The 1919 additions to its plant enabled Chandler to nearly quadruple its pre-war output, reaping it an end-of-the-year profit of $2,800,000.[36] In February, 1919, The Chandler Motor Car Company organized a subsidiary, The Cleveland Automobile Company.[37] The company's $1,400,000 capitalization was financed through the New York office of Hornblower and Weeks, having been refused similar support from the Cleveland banks.[38] Frederick Chandler served as chairman of the subsidiary's executive committee, with Chandler's engineer, John Whitbeck, as its president and Chandler's secretary, Sidney Black as its ivce-president.[39] The Cleveland Automobile Company appealed to the large medium-priced automobile market. Its Cleveland car cost $500 less than the Chandler Light-Six and was sold through Chandler's dealerships, resulting in 30,000 advance orders by August, 1919.[40]

The Cleveland Automobile Company bought 17 acres at the corner of Euclid Avenue and London Road, adjacent to the New York and St. Louis Railroad tracks. Ernest McGeorge designed the plant and John Gill and Son began construction in April, 1919. The building was completed by mid-July.[41] The Cleveland Automobile factory closely resembles building #3 at the Chandler plant. Four-stories tall, 80 feet wide, and 600 feet long, the building has a flat-slab structural system, 20 foot square bays, circular mushroom columns supporting drop panel concrete floors, and an

exterior of brick spandrels and industrial-sash windows. A passenger elevator, two freight elevators, and four stairways serviced the original building. Company offices occupied the first two bays of the factory, set off visually with brick piers, a raised parapet, and a corner elevator and stair tower with stone-capped buttresses and a gabled parapet.

The plant contained "two progressive assembly lines."[42] Two loading docks stood along the west side of the factory, "ideally located for quick shipments."[43] While The Cleveland Automobile Company claimed that the "car (was) built entirely within the plant," the company merely assembled the cars there, for it was as dependent as its parent company on suppliers for its clutches, transmissions, electrical systems, and bodies.[44]

In October, 1919, Cleveland extended its plant with a 200 foot by 80 foot four-story addition. John Gill and Son completed Ernest McGeorge's plans in April, 1920, at the same time beginning construction of a 240 foot by 80 foot machine shop also designed by McGeorge.[45] Facing London Road, with its own rail siding, the machine shop parallels the Cleveland auto plant, 264 feet to the west. The flat-slab two-story concrete structure was designed to support two additional floors and to expand south along London Road. The building thus has an exposed concrete frame on its roof and projecting bra concrete brackets along the south wall. Fifteen feet north of the machine shop stands a monitor-roofed structure originally used as a foundry. Eighty-two feet square, the

building has a facade of stone-capped buttresses and a central raised parapet. The interior is well lighted with banks of industrial-sash windows. Like the machine shop, the foundry was designed to expand, in this case, to the west toward the main factory.[46]

At the back of the site, The Lundoff-Bicknell Company built a 44 foot square boiler house. Employing a forced hot water heating system, the building contained B. & W. Sterling boilers, Detroit stokers, Anderson air traps, and Illinois stop and check valves.[47] Next to the boiler house stood a 7 1/2 foot diameter brick stack, 175 feet tall.[48]

In October, 1919, The Chandler Motor Car Company expanded its plant with a five-story administration building, building B. The reinforced concrete structure has 18 foot bays with a double-loaded corridor featuring marble wainscotting and door trim. Many of the offices have wood paneling with double walls. The exterior face brick is rusticated along the first floor with a belt-course of vertical stretchers that is repeated in the brick and tile cornice. At the second level, opposite the building's one passenger elevator, stands a bridge connecting the administrative offices to building A.[49]

The luxurious materials used in the Chandler offices reflected the prosperity of the company in the early part of 1920. In the summer of that year, Chandler's production rate had reached a record 3000 cars a month.[50] That prosperity ended with the

recession that grew during the latter half of the year. By December, the company's production rate had fallen to 800 cars a month, resulting in an annual output of 23,832 vehicles.[51] The Cleveland Automobile Company was similarly hurt by the recession. Its 1920 total of 16,000 automobiles fell by 3,800 in 1921. In 1922, Cleveland built 9,500 automobiles only 1,500 less than Chandler.[52]

The two companies countered their declining sales with mechanical innovations and advertising gimmicks. In 1923, Chandler promoted its "Pike's Peak" motor, a more powerful version of its standard six-cylinder engine supposedly tested on Pike's Peak. Although the "Pikes Peak Motor (became) a sensation of the day," Chandler sales that year remained at 11,000.[53] The lower-priced Cleveland car, for the first time, outsold its parent company, with an output of 14,500 automobiles in 1923.[54] Chandler continued its innovations in 1924 with the introduction of the "Traffic Transmission," a new gear mechanism for smoother shifting at slow speeds.[55] In 1925, Cleveland introduced a "One Shot" lubrication system, operated with a plunger under the dashboard.[56] By 1926, Chandler's annual output had climbed to 12,600 automobiles, 6,500 less than the output of The Cleveland Automobile Company.[57]

While both companies remained the two largest auto manufacturers in Cleveland, they could not compete with such companies as Chevrolet and Ford. In March, 1926, The Chandler Motor Car

Company decided to absorb its subsidiary, creating The Chandler-Cleveland Motors Corporation with $3,000,000 in assets.[58]

With that consolidation, the new corporation achieved enough financial stability to expand the Cleveland factory. The four-story, 100 foot by 80 foot extension to the rear of the plant was designed by Ernest McGeorge and constructed by the William Dunbar Company. In October, 1928, the machine shop at the former Cleveland plant received a one-story, steel-framed extension that was completed in December.[59]

December, 1928, also brought the purchase of a majority of Chandler-Cleveland stock by the Detroit-based Hupp Motor Car Corporation. That purchase placed Hupp in 9th place in the nation's automobile industry. Hupp ended production of the Chandler-Six on May 1, 1929, using the former Chandler plant for the assembly of the Hupmobile Six and the former Cleveland plant for body building and finishing.[60]

The Hupp Motor Car Corporation made minor alterations to both plants. In June 1929, it added a 17 foot by 140 foot steel-frames bridge connecting building #1 and #2 at the Chandler factory, employing Ernest McGeorge as architect and the Sam W. Emerson Company as contractor. McGeorge also designed two 10 foot by 60 foot brick lean-to sheds along one side of building #1. At the former Cleveland plant, Ernest McGeorge designed and Sam W. Emerson built a 740 foot by 20 foot timber loading platform and a 44 foot by 20 foot addition to the boiler house.[61]

The stock market crash ended all construction at the plants. Sales of the Hupmobile Six fell from 16,000 in 1929 to 8,700 in 1930, while the corporation's total output fell from a high of 66,000 automobiles in 1928 to 17,000 in 1931.[62] The Hupp Motor Car Corporation closed the assembly line at the Chandler plant in October, 1931, maintaining the former Cleveland plant as a body building facility until October, 1934.[63]

In 1936, The Parker Appliance Company moved into the Cleveland Automobile plant. Now The Parker-Hannifin Corporation, a manufacturer of fittings for hydraulic transmissions, the company has converted the factory into offices, laboratories, and storage space and has added several one-story steel-framed structures to the side. All of the original machinery and equipment, as well as the building's industrial-sash windows, have been replaced. None of the original equipment exists in the former machine shop and foundry along London Road, buildings now owned by a few smaller manufacturers.

The Weatherhead Company also moved in the former Chandler plant in 1936. A manufacturer of automobile parts and accessories, Weatherhead has maintained the plant's boilers, compressors, and heating system, as well as the original drawings of the buildings. Building #6 of the former Chandler plant is separately owned and used as a warehouse.

At their peak, The Chandler Motor Car Company and The Cleveland Automobile Company were the second largest auto manufacturers out-

side of Detroit, producing almost 75% of the cars made in Cleveland.[64] The companies failed for seemingly contradictory reasons. On one hand, they grew too rapidly after World War I, leaving themselves overextended and thus vulnerable during the 1920 recession. On the other hand, the companies did not grow fast enough to compete with the medium-priced auto companies in Detroit. Once again, it is surprising that Chandler and Cleveland performed as well as they did against such odds.

(Chandler) Footnotes

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42. Fred Kingsbury, "Cleveland Made in Modern Plant," Cleveland Plain Dealer, February 22, 1925, p 5D
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61. Cleveland Building Permits, Cleveland City Hall.
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Addendum to

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HAER
OHIO,
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